

Wet Cleaning Equipment Report

*A report on washers, dryers, finishing equipment,
and detergents for machine-based professional wet cleaning*

by Anthony Star and Cindy Vasquez

May 1997

This report was prepared entirely by the
Center for Neighborhood Technology
2125 West North Avenue
Chicago, IL 60647

Wet Cleaning Hotline: 773/278-4800 ext. 299

Table of Contents

Introduction

Wet Cleaning Machines

Aqua Clean

Aquatex

Böwe Permac

Daewoo

Marvel

Milnor

UniMac

Size Comparison Chart

Finishing Equipment

Aqua Clean

High-Steam

Sankosha

Veit

Detergents

Adco

Aqua Clean

Aquatex

Büfa

Caled

Daewoo

EnviroSafe

Fabritec

Gurtler

Laidlaw

R.R. Streets

Royaltone
Stamford
Soap Comparison Chart

Introduction

Professional wet cleaning can be called something old and something new. Cleaning in water has always been part of the repertoire of professional cleaners. The ability to clean a large portion of clothes in water in an economically viable way became possible with the development of machine based wet cleaning. By reducing reliance on perchloroethylene -- the most commonly used dry cleaning solvent - wet cleaning can reduce concerns regarding environmental and health impacts of the garment-cleaning industry. It can help dry cleaners provide their customers with high quality service while avoiding the burdens of regulation and liability.

Wet cleaning machines are a new line of high-tech commercial washing and drying machines that increase the range of dry clean only garments that can be cleaned in water. Wet cleaning processes include these computer-controlled washing and drying machines and professional, labor-intensive techniques which control factors, such as mechanical action and temperature, that can cause shrinkage.

Wet cleaning is a process that requires skill, experience, and knowledge- with a dose of experimentation for best results. With machine wet cleaning, several machine manufacturers believe that the essential components of a quality wet cleaning system should include: a high tech washer, the specifically formulated wet cleaning detergents/ chemicals, a high tech dryer, and proper training, cleaning skills, and knowledge of fabrics and fabricare.

This report covers the equipment currently on the United States market. It is divided into three sections. The first section covers washers and dryers, the second section, finishing equipment, and the third section, detergents and other chemicals.

With many new products being released at the Clean Show in June, 1997, complete information and pricing was not available on all products.

Acknowledgments

This report was prepared by Research/Outreach Associate Anthony Star. It was based upon previous editions by Cynthia Vasquez. CNT would like to thank representatives of all the companies for their assistance with information. Partial funding for this report comes from the United State Environmental Protection Agency Design for the Environment project.

Disclaimer

The Center for Neighborhood Technology compiled this information on the features and costs of wet cleaning machines which are presently on the U.S. market. The finding are summarized in this report. This document is not an endorsement of machine based wet cleaning, nor does it include a qualitative evaluation of wet cleaning machines. It is strictly a compilation of information obtained from each company featured.

[Return to Table of Contents](#)

W t Cleaning Machines

In machine based wet cleaning technology is harnessed to make washers and dryers with precise controls, chemicals optimized for cleaning in water, and tensioning finishing equipment to restore the proper size and shape to garments.

The machines in this report share many common features. Computer control, programmability and other similar features are the essential components of these machines. Manufacturers have adopted different strategies for their equipment. Some offer a full package system of washer and dryer (and also offer the chemicals and finishing equipment) while others sell components and allow the professional cleaner to put together a system tailored to their needs. The machines span a wide range of sizes. There are inexpensive machines designed to supplement dry cleaning to large systems for heavy production loads. There is no one best way for wet cleaning. The diversity of equipment now on the market allows the cleaner who is considering wet cleaning to shop among brands, technologies and scales. It is the position of CNT and the discovery of many cleaners around the world that wet cleaning is an effective, viable technology. It is up to the individual cleaner to decide what selection of equipment and chemical is appropriate for their particular shop.

When considering the investment in any of this equipment, a cleaner should be sure to try to see the equipment in use first hand. Ask a dealer for a demonstration, inquire about other local cleaners using the machine for references, or attend trade shows or seminars.

Note

In wet cleaning machines, load capacity in practice depends upon whether the operator is doing wet cleaning, washing (i.e., regular laundry), shirt laundry, or leather and suede cleaning. For those articles which are highly sensitive to mechanical action, actual load capacity is often only 50% of stated maximum capacity. The capacity will differ between manufacturers and machine size. Where possible this report lists the recommended wet cleaning capacity.

[Return to Table of Contents](#)

Aqua Clean

Manufactured in Sweden and Denmark by Wascator/Electrolux.

<u>Model</u>	<u>Capacity (lbs.)</u>	<u>Drum RPM</u>	<u>Extract G</u>
Mini Aqua Clean	12	n/a	n/a
System 15	15	n/a	n/a
System 30S, 30G	18	24-950	40-310
System 50/30S, 50/30G, 50S, 50G 30		24-850	40-300
System 80S, 80G	50	24-650	40-220
EX90	70	n/a	n/a

Key Features

Aqua Clean sells complete packages consisting of both a washer and dryer. They also sell finishing equipment and their own line of wet cleaning chemicals.

Washers feature frequency controlled motor, which allows operator to change speeds/mechanical action

of the drum quickly and efficiently.

Machines come with programs preloaded and new programs may be added by the user, up to a maximum of 90.

Average wash cycle in 25 minutes, longest is 35 minutes. Average drying cycle is 15 minutes.

Dryers are available with either gas and steam heat. Model names are indicated by either G or S.

Dryers feature Residual Moisture Control (RMC) sensors which directly measure garment moisture 400 times per second for precise drying.

Dryers have up to eight preset programs plus manual cycle options.

Aqua Clean provides hands-on training with the purchase of each machine and additional marketing and promotional support.

Notes on Specific Models

The Mini Aqua Clean model is designed to have the dryer stacked on top of the washer and fits into only four square feet of floor space. Aqua Clean offers a one year trade-up credit program which allows purchasers of this system to apply the purchase price to a larger machine if they decide to expand their wet cleaning capacity.

The 30 lb. models are distinguished by the size of the dryer. The 30/50 systems have a 30 lb. dryer, the 50 systems, a 50 lb. dryer.

The EX90 washer is paired with 2 50 lb. dryers.

Pricelist

Mini Aqua Clean n/a

System 15 n/a

System 30S \$22,730

System 30G \$22,020

System 50/30S \$26,165

System 50/30G \$25,450

System 50S \$34,605

System 50G \$31,640

System 80S \$36,380

System 80G \$33,475

EX90 Washer n/a

Options:

Base recycling tank for 30 & 50 systems
\$4,020

Machines without base tanks may have prefabricated steel base to raise washer 6 inches.

System 30 \$353.75

System 50 \$376.75

Contact

Aqua Clean Systems, Inc.

469 Doughty Blvd.

PO Box 960338

Inwood, NY 11096-0338

Phone: 516-371-4513

or 800-381-7222
Fax: 516-372-4204

[Return to Table of Contents](#)

Aquatex

Washer manufactured in Belgium by IPSO, dryer in the US by American Dryer, drying cabinet in England by Evapoform.

Model	Capacity (lbs.)	Drum RPM	Extract G
AQW3050	30	10-50,250-1000	383 max.
AQW4065	40	10-50,250-1000	383 max.
AQW75125	75	10-50,250-1000	383 max.

Key Features

Aquatex sells complete systems consisting of both a washer, dryer and detergent stand. An additional drying cabinet is also available to supplement the dryer.

Machines come with 10 programs and the ability to create 30 additional programs.

Average wash cycle is 20 minutes.

Dryers are available with either gas or electric heat. Humidity sensors measure both garments and ambient room humidity.

Dyer has six programmable cycles. Cycles range from 15 to 30 minutes. Dryer temperature is reduced as humidity decreases.

Pricelist

Prices were not available from Aquatex.

Contact

Aquatex
PO Box 1322
Cedar Rapids, IA 52406

Phone: 800-727-1592

Fax: 319-366-8941

[Return to Table of Contents](#)

Böwe Permac

Manufactured in Switzerland by Schulthess.

<u>Model</u>	<u>Capacity (lbs.)</u>	<u>Drum RPM</u>	<u>Extract G</u>
Wash 150 25	20-1050	380	
Wash 200 35	20-950	400	

Key Features

Böwe Permac sells complete packages consisting of both a washer and dryer. They also sell chemicals and Veit finishing equipment.

Washers come with 19 standard programs, 12 special commercial programs and room for 87 additional programs.

Washers feature 3 pump automatic injection system.

Dryers are steam heated and feature fuzzy logic and residual moisture control sensors. Air is recirculated.

Pricelist

Wash 150 \$23,700

Wash 200 \$32,100

Options:

Single reuse tank for Wash 150
\$2,696

Double reuse tank for Wash 150
\$4,850

Single reuse tank for Wash 200
\$2,995

Double reuse tank for Wash 200
\$5,295

Circulation Pump \$1,285

Door Pump with Spray
\$1,225

Contact

Böwe Permac
13628 Beta Road
Suite B
Dallas, TX 75244

Phone: 972-503-1998

or 800-287-0870

Fax: 972-503-3311

[Return to Table of Contents](#)

Daewoo

Manufactured in Korea.

<u>Model</u>	<u>Capacity (lbs.)</u>	<u>Drum RPM</u>	<u>Extract G</u>
DWF-1088PA 24		160/770	n/a
DWF-9290PA 20		160/770	n/a
DWF-5590PA 12		145/780	n/a

Key Features

Daewoo only sells a washer. Special chemicals are also available.

Washer fits into approximately 4 square feet.

Daewoo washers use what the company calls "air bubble power" in which air bubbles pumped through the base of the drum provide vertical water flow while the pulsator provides reverse flow.

7-8 programs are included.

Notes on Specific Models

DWF-1088PA and DWF 9290PA allow programming by the user and have steel cabinets.

Pricelist

DWF-1088PA \$1,099

DWF-9290PA \$949

DWF-5590PA \$599

Contact

CNA, Inc.

1113 Salem Drive

Schaumburg, IL 60194

Phone: 847-885-3600

Fax: 8470885-3672

[Return to Table of Contents](#)

Marvel

Manufactured in the US.

<u>Model</u>	<u>Capacity (lbs.)</u>	<u>Drum RPM</u>	<u>Extract G</u>
ADS 40# 40		24-600	98/193
ADS 60# 60		24-600	115/170
ADS 10# 100		24-600	28/111

Key Features

Marvel sells the "AquaDry" washer which features a built-in drying system. The Marvel system eliminates the need to transfer clothes from the washer to dryer by processing the clothes in one unit.

Microprocessor controlled. May be reprogrammed on a personal computer.

Two temperature gauges for adjustable drying settings.

Pricelist

ADS 40# \$20,995
ADS 60# \$23,995
ADS 100# \$29,995

Options:

Thermometer \$175
Alarm \$130
Steam Injection \$515
Extra Supply \$310
Two Thermal Fills \$460

Contact

Marvel Manufacturing
5922 San Pedro
San Antonio, TX 78212

Phone: 210-344-8551
or 800-487-1326
Fax: 210-344-3004

[Return to Table of Contents](#)

Milnor

Manufactured in the US.

<u>Model</u>	<u>Capacity (lbs.)</u>	<u>Drum RPM</u>	<u>Extract G</u>
30022 F8W 55		5-40/200-835	297 max.

Key Features

Milnor sells both a washer and a dryer.
100 programs available, 98 are user-programmable.
Programmable temperature control
Options include water/chemical recirculation, overhead water reuse tank, five compartment flushing supply injector, electric heating cooldown.

Pricelist

30022 F8W \$17,245
Dryer \$7,816

Contact

Pellerin Milnor
PO Box 400
Kenner, LA 70063

Phone: 504-467-9591

Fax: 504-468-9307

[Return to Table of Contents](#)

UniMac

Manufactured in USA

<u>Model</u>	<u>Capacity (lbs.)</u>	<u>Drum RPM</u>	<u>Extract G</u>
UF18	10	86-1080	350 max.
UF35	20	69-960	350 max.
UW35	20	65-795	350 max.
UF50	25	65-900	350 max.
UW60	30	65-720	350 max.
UF85	45	63-825	350 max.
UW85	45	70-580	350 max.
UW125	65	62-580	350 max.
UF135	70	55-715	350 max.
UF250	125	55-650	350 max.

Key Features

UniMac sells both washers and dryers, but does not specifically package them together.

UF models are softmounted, UW models have a rigid mount.

39 programmable cycles, 7 programmable wash actions, 3 programmable water levels, 2 programmable wash speeds, 4 programmable extract options, 8 liquid supply signals, programmable heat option.

UniMac recommends consulting with chemical suppliers for programming advice.

Wash cycles range from 15 to 40 minutes.

Washer options include: water reclamation module, water recirculation module, starch dispenser module, and spray impregnation module.

Dryer available in either steam or electric heating.

Dryers have 10 levels of dryness

Drying cycles range from 8 to 35 minutes.

Dryer options include: reversing cylinder, stainless steel cylinder and stainless steel panels.

Pricelist

Washers:

UF18 \$4,352

UF35 \$10,332

UW35 \$8,373

UF50 \$12,980

UW60 \$9,191

UF85 \$14,167

UW85 \$19,609

UW125 \$19,791

UF135 \$30,340

UF250 \$50,480

Dryers:

DTB35 \$2,594

DTB50 \$2,896

DTB75 \$3,489

DTB120 \$7,429

Contact

UniMac

3595 Industrial Park Drive

Marianna, FL 32446-9458

Phone: 414-4267

Fax: 414-748-4590

[Return to Table of Contents](#)

Wet Cleaning Machines Size Comparison Chart

Lbs	Aqua Clean	Aquatex	Böwe Permac	Daewoo	Marvel	Milnor	UniMac
10-19	Mini 15 30/SG			5590PA			UF18
20-29			Wash 150	9290PA 1088PA			UF35 UW35 UF50
30-39	50/30S&G 50S&G	AQW3050	Wash 200				UW60
40-49		AQW4065			ADS 40#		UF85 UW85
50-59	80S, 80G					30022 F8W	
60-69					ADS 60#		UW125
70-79	EX90	AQW75125					UF135
100					ADS 100#		
125	UF250						

[Return to Table of Contents](#)

Finishing Equipment

While some equipment companies say their machines work with standard pressing equipment,

tensioning finishing equipment is increasingly recognized as an essential component of wet cleaning. Performance tests have shown that wet cleaning is effective in the actual cleaning of clothes, but that dimensional change (shrinking and stretching) can be a problem. The increased labor costs associated with proper finishing of clothes can increase the cost of wet cleaning and make it not financially comparable to dry cleaning. Tensioning equipment can provide a means to reduce the labor costs of finishing clothes.

There are two main types of tensioning equipment, form finishers and pants toppers. Both pieces of equipment function by using steam to relax fibers, moving parts to stretch and shape clothes and hot air to dry.

[Return to Table of Contents](#)

Aqua Clean

Apollo Multifinisher

40 programs can be permanently stored to process different types of garments.

Aqua Clean claims 40 jackets per hour.

Shoulder device can be exchanged for a waist form for the finishing of skirts.

Steam is injected into the garment while tensioning devices reform the garment. The steam cycle is followed by hot air to dry the fabric.

Steam pressure: 79 PSI (max)

Zeus Pants Topper

Microprocessor controlled.

Contact

Aqua Clean Systems, Inc.
469 Doughty Blvd.
PO Box 960338
Inwood, NY 11096-0338

Phone: 516-371-4513
or 800-381-7222
Fax: 516-372-4204

[Return to Table of Contents](#)

High-Steam

Hi-Steam sells a "European Finishing Center" which includes a tensioning form finisher, a tensioning pants topper and a finishing board.

JAM500 Tensioning Form Finisher

Telescoping Form-Adjusts in height to allow for finishing of long garments and overcoats.
Front and rear blades along with inside expanders-Hold the garment in the proper position and shape.
3 Timers-Steam, Steam/Air, and Air cycles with the variable cycle times.
Automatic tensioning-at start of steam cycle the form raises slightly to put the garment under tension.
Foot Pedal Controls-Allows both hands free for proper positioning of garment.
Steam Pressure: 60-90 PSI
Air Pressure: 90-125 PSI

PAM200 Tensioning Pants Topper

Waistband Tensioning Device.

Adjustable Cuff Clamps, Inside Cuff Expanders.
Electronic Program Controls- Can program Steam, Steam/Air and Air cycle times.
Automatic Tensioning- At the start of the steam cycle the pants are placed under tension.
Steam Pressure: 60-90 PSI
Air Pressure: 90-125 PSI

Contact

Hi-Steam
610 Washington Avenue
Carlstadt, NJ 07072

Phone: 201-560-9333
Fax: 201-460-3578

[Return to Table of Contents](#)

Sankosha

CN-50 Automated Form Finisher

Sankosha claims that a garment may be finished in 40 seconds.
The form height is adjustable to suit various types of garments and adjustment of garment on the form is easy to do.
Button Control- Once garment is on the form, front and back clamping, upward and sideways stretching are in automatic operation.
Steam, Steam-air and drying time set by button control.
Form Height selection 9 increments.
3 modes: No sideways stretching; Before and after steaming the form is stretched up in 2 steps; Steam-air is eliminated.
Steam: 71 PSI
Air: 71 PSI

CN-200 Panther Press

Combination pants topper and legger.

Contact

Sankosha USA Inc.
1715 Elmhurst Road
Elk Grove Village, IL 60007

Phone: 847-427-9120

Fax: 847-427-9634

[Return to Table of Contents](#)

Veit

8355 & 8360 Multiform

Pneumatic height adjustment.

Easy garment positioning is granted by a suction facility in the hem area.

Lateral slide, clamps and height controlled separately.

Removable lapel clamp with height adjustment and long pressure clamp are included.

Base unit with strong, adjustable fan and bust, can be turned through 180°.

Controls on a separate stand.

Accessories:

Sleeve tensioners.

Sleeve fix, small and large sizes

Cabin. Creates less condensate, no steam escapes during the finishing process

8705 & 8710 Trouser Topper

Veit claims 125 parts per hour output.

Excellent, condensate-free steam provided by integrated steam reheater.

Optimal steam distribution through double steam nozzles.

Times for steam, steam/air and air can be adjusted separately to give good finishing with all types of materials.

Contact

Böwe Permac
13628 Beta Road
Suite B
Dallas, TX 75244

Phone: 972-503-1998

or 800-287-0870

Fax: 972-503-3311

[Return to Table of Contents](#)

Detergents

A wide range of detergents and other chemicals for wet cleaning are now available. Some products are marketed with wet cleaning machines while others may be purchased from distributors or directly from the manufacturer. The typical chemicals used in wet cleaning include spotting agents, detergents, fabric conditioners and sizing products. Because wet cleaning will handle water and oil based stains differently than dry cleaning, the process of treating stains will require different chemicals and process. Some of these products were originally designed for laundry and hand washing and have been adapted to machine based wet cleaning. Others have been specifically formulated for wet cleaning.

Cleaners particularly concerned with the complete elimination of toxic and hazardous chemicals from the cleaning process may wish to ask for Material Data Safety Sheets (MSDS) from the supplier. These information sheets will provide information on specific chemicals, and risks associated with the use of a product. Some of the chemicals listed here are completely non-toxic while others contain small amounts of hazardous substances.

Professional wet cleaning is most successful when specially formulated detergents and chemicals are used. In the early days of wet cleaning, cleaners had a limited selection of soaps to choose from. As the popularity of wet cleaning has increased, there is now a strong line-up of products available.

[Return to Table of Contents](#)

Adco

- Wetcleaning Detergent
- Wetcleaning Sizing and Conditioner
- Wetcleaning Combo

Contact

Adco
PO Box 999
Sedalia, MO 65302-0999

Phone: 800-821-7556

Aqua Clean

The following products are available to owners of Aqua Clean systems:

- Aquasafe Detergent.
- Prefinish Conditioner.
- Dye Fixer.
- Suedesoft. Leather and suede cleaner.

Contact

Aqua Clean Systems, Inc.
469 Doughty Blvd.
PO Box 960338
Inwood, NY 11096-0338

Phone: 516-371-4513
or 800-381-7222
Fax: 516-372-4204

Aquatex

Aquatex detergents have been specially developed to work in conjunction with the system. These include detergents for cleaning, finishing, leather detergent and finish, stain removal agents and specialized finishes for flame resistance and water resistance. When a cleaner buys the Aquatex system, these products are available for purchase.

Contact

Aquatex
PO Box 1322
Cedar Rapids, IA 52406

Phone: 800-727-1592
Fax 319-366-8941

Büfa

- Oldopal Prefinish.
- Oldopal Basic. Detergent.
- Oldopal L. Detergent.
- Oldopal W. Detergent.
- Oldopal Forte.
- Detafix-Set. Stain remover.
- Terasit + Scotchgard. Fabric Finish.

Contact

Böwe Permac
13628 Beta Road
Suite B
Dallas, TX 75244

Phone: 972-503-1998
or 800-287-0870
Fax: 972-503-3311

Caled

- Detergent
- Flame retardant
- Fabric protector

Spotting agents:

- Zuds.
- Tan-e-cal/Tanpan.
- Prote-cal.

Contact

Caled-Signal Corp.
26 Hanes Dr.
Wayne, NJ 07470

Phone: 800-OK-CALED

Daewoo

- Dryten. Detergent for wool and silk

Contact

CNA, Inc.
1113 Salem Drive
Schaumburg, IL 60194

Phone: 847-885-3600

Fax: 8470885-3672

EnviroSafe

- Enviro Safe. Detergent.

Contact

Envirosafe Wet-Cleaning Technologies
130 Morristown Road
Bernardsville, NJ 07924

Phone: 908-766-3700

Fax: 908-766-7054

Fabritec

- Gentle Tex. Detergent.
- Versa Tex. Detergent.
- Conditionit. Conditioner.

These products are sold directly to dry cleaners on a selective basis.
Fabritec also sells products under the Sanitone line.

Contact

Fabritec
200 Industrial Road
Cold Spring, KY 41076

Phone: 606-781-8200

or 800-543-0406

Fax: 606-781-8280

Gurtler

- Easiclean. Detergent.
- Dis-it. Stain remover.
- Softfab. Fabric softener.
- Handle. Sizing product.

Contact

Gurtler Chemicals Inc.
15475 South LaSalle St.
South Holland, IL. 60473

Phone: 708-331-2550
or 800-638-7300

Laidlaw

- Laundry Wetspo. Prespotter.
- Powerbrite. Detergent.
- Soft N' Brite. Detergent.
- Softenall. Fabric softener.
- Aquasize. Sizing product.

Contact

Laidlaw Corp.
1212 E. 5th St.
Metropolis, IL 62960

Phone: 800-851-7731

R.R. Streets

The Hydrocare system includes:

- Detergent.
- Retexturizing Finish.
- Fabric Conditioner.
- Universal Pre-Treatment.

Contact

R.R. Street & Co.
184 Shuman Boulevard
Naperville, IL 60563-8464

Phone: 630-416-4244
Fax: 630-416-4150

Royaltone

- Spot Plus. Spray spotter.
- Spot Magic. POG spotter.
- Blood Magic. protein spotter.
- Stain Magic. Tannin spotter.

- Ink Magic. Ink remover.
- Soil Magic. Detergent and conditioner.
- Magic Kote. Repellent conditioner.

Contact

Royaltone
PO Box 35949
Tulsa, OK 74153

Phone: 918-663-9666
or 800-331-5506
Fax: 918-665-6017

Stamford

- Laundry pre-spotter.
- DLD. Detergent.
- Wetclean. Detergent.
- Conditioner.

Contact

Stamford
200 Industrial Road
Cold Spring, KY 41076

Phone: 606-781-8200
or 800-543-0406
Fax: 606-781-8280

Soap/Chemical Comparison Chart

	Spotting Agent	Detergent	Conditioner	Sizing	Other
Adco		X	X	X	
Aqua Clean		X	X		X
Aquatex	X	X			X
Büfa	X	X	X		X
Caled	X	X			X
Daewoo		X			
EnviroSafe		X			
Fabritec		X	X		
Gurtler	X	X	X	X	
Laidlaw	X	X	X	X	
R.R. Streets		X	X	X	
Royaltone	X	X	X		X

Stamford	X	X	X	
----------	---	---	---	--